

throughout Kumaon, including in established protected areas (Khan 1998).

**Conservation problem:** Due to excessive dependency of the local people on oak patches for fuel wood, fodder and timber, the forests are getting degraded and are shrinking in size. Moreover, the pine forests are encroaching the oak forests, which is not a good sign for the Grey Goral and the Serow habitat.

The other major threat is poaching of wildlife, which is widespread throughout Kumaon. Poaching is highest in the Sunderdhunga, Pindari and Munsiyari areas where locals hunt the Grey Goral and the Serow for meat. In Pithoragarh district, hunting pressure is very high towards the Askot Wildlife Sanctuary, as international boundaries with Nepal and Tibet meet in this area. This is also an old trade route. These routes are still being utilised for poaching animals such as Musk Deer *Moschus chrysogaster* (Hodgson) and the Himalayan Black Bear *Ursus thibetanus* (G. Cuvier.)

**Conservation strategy:** In Kumaon Himalayas, there are only two wildlife sanctuaries, i.e. Binsar and Askot, which together cover about 645 sq. km. Both sanctuaries have very high anthropogenic pressures. Binsar is just 45 sq. km in size.

Both sanctuaries conserve only the Grey Goral leaving the Serow unprotected. In order to conserve both species, the protected area coverage must be increased. Areas such as Kilbary, Binayak and Kunjakharak in Nainital and Pindari and Sunderdhunga region in Almora district have very high conservation potential and therefore should be declared as protected areas. There is also a need for placing some regulation on cutting and lopping of trees and grazing. A better control of poaching in the remaining unprotected oak patches is also needed.

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### 5. RECORD OF THE CHINESE GORAL *NAEMORHEDUS CAUDATUS* IN ARUNACHAL PRADESH<sup>1</sup>

#### Introduction

Ungulates are believed to be amongst the best documented taxa of large wildlife, with only ten new species being described between 1930 and 1994 (Pine 1994). Yet, the past decade saw a spate of ungulate discoveries in Southeast Asia, with four species new to science being described between 1994 and 1998 (Schaller and Vrba 1996; Giao *et al.* 1998; Rabinowitz *et al.* 1998; Amato *et al.* 1999). These new discoveries reflect the hitherto poor status of exploration and documentation of wildlife in the remote Southeast Asian forests. In India, the wildlife of the northeastern state Arunachal Pradesh (26° 28'- 29° 30' N and 91° 30'- 97° 30' E; 83,743 sq. km) has remained poorly documented. One of our surveys in 2002 recorded the Leaf Deer *Muntiacus putaoensis* in Arunachal (Datta *et al.* 2003), a new species that was first

found in the adjoining forests of Myanmar in 1997 (Rabinowitz *et al.* 1998; Amato *et al.* 1999). This record of the Leaf Deer in the mid-elevation forests of Eastern Arunachal is so far the only new addition to the list of large mammals of the Indian subcontinent in the last century (Datta *et al.* 2003).

Arunachal Pradesh is situated in the transition zone between the Himalayan and Indo-Burmese regions (Mani 1974; Rodgers and Panwar 1988). The entire state is part of the Eastern Himalayan global biodiversity hotspot (Mittermeier *et al.* 1998; Myers *et al.* 2000) as well as among the 200 globally important eco regions (Olson and Dinerstein 1998). Most wildlife surveys in Arunachal have so far been restricted to low and mid-elevation forests (Katti *et al.* 1992; Athreya *et al.* 1997; Kumar and Singh 1999; Pawar and Birand 2001; Datta *et al.* 2003). Apart from a recent survey of

pheasants in mid-elevation and alpine areas that led to the discovery of a possibly new species of pheasant (Kumar and Singh 1999), the status and occurrence of high altitude (> 3000 m) wildlife remains largely unknown. This is so despite the fact that 23% of the State's land area is at elevations over 3000 m.

We undertook a biological expedition to the high altitude areas of Western Arunachal with the objective to make an inventory of wildlife, and identify areas for possible designation as wildlife reserves. The survey, conducted in August-September 2003, covered almost the entire high altitude areas of Tawang and West Kameng districts. Here, we report a significant finding of the survey: the occurrence of the Chinese Goral *Naemorhedus caudatus* (also called Long-tailed Goral) in western Arunachal Pradesh. Choudhury (2003) had earlier reported the Chinese Goral as a subspecies of Himalayan goral *N. goral caudatus* from eastern and north-eastern Arunachal Pradesh - the Mishmi Hills and Patkai Range, in the districts of Dibang Valley, Lohit, Changlang and Tirap'. This record of the Chinese goral from western Arunachal Pradesh makes our survey region, the high altitudes of Tawang and West Kameng districts the only known region in the world to harbour all the three extant species of goral.

### Goral

Goral is a goat-like animal with sturdy legs adapted for jumping and climbing. The adult body mass varies between 20-30 kg, with a head and body length of 105-150 cm and 58-70 cm at the shoulder (Prater 1971; Roberts 1977; Zhang 1987; Zhiwotschenko 1990; Corbet and Hill 1992). Sexes are similar in size and build, and have slender, backward curving, sharp pointed horns with small closely spaced annulations. Average horn length ranges from 11-15 cm, and sometimes up to 23.5 cm (Prater 1971; Roberts 1977; Schaller 1977; Mishra *et al.* 1998). Horns of males are slightly thicker at the base and are more divergent compared to females. Goral is known to inhabit a wide altitudinal range from sea level up to 4500 m, though it is mostly restricted to relatively steep, open grassy slopes (Mishra and Johnsingh, in press).

There was considerable confusion in the taxonomy of goral until Groves and Grubb (1985) proposed the currently followed classification (Shackleton and Lovari 1997), which recognizes three extant species based on morphology. The Himalayan Goral *N. goral* occurs in the Himalayas and northeast India (spreading over India, Pakistan, Nepal, China, Bhutan and Myanmar), the Red Goral *N. baileyi* is restricted to a relatively small area of Arunachal Pradesh, Southeast China and Northern Myanmar, and the Chinese or Long-tailed

Goral *N. caudatus* is found in China, Myanmar, Thailand, Laos, North and South Korea, and the Russian Federation (Shackleton 1997). Both the Himalayan and Chinese goral are known to feed predominantly on grass (Zhiwotschenko 1990; Mishra and Johnsingh 1996).

### Goral in Arunachal Pradesh

The Himalayan and Red Goral are known to occur in Arunachal Pradesh. Recently, Choudhury (2003) has reported the Chinese Goral from eastern Arunachal Pradesh, though we have so far not recorded the species in our surveys in the eastern district of Changlang and Tirap (unpublished data). During the present survey we found that the Red Goral and Himalayan Goral are commonly hunted in Tawang and West Kameng. The *Monpa* herders often make coarse jackets and trousers of Himalayan Goral hide, which are apparently very effective against rain and cold. Each garment requires skins of two adult goral, which can be purchased from hunters for c. Rs. 300 each. Although we did not sight the Himalayan Goral during our survey (largely because we were surveying areas above 3000 m; the species is relatively more common in lower altitudes), we saw several skins with hunters, and with herders who were wearing them. One of us (CM), accompanied by two hunters, sighted two Red Goral in Phurgang (Fig. 1) in West Kameng district. The goral were seen along a cliff at an altitude of 4100 m. We observed them from below at a distance of 300 m, and since they were silhouetted against the sky, we were unable to ascertain whether they were Himalayan or Red Goral. However, the hunters accompanying us as guides were positive that they were Red Goral, having killed one in the same site a few months back. We also saw fresh signs of Takin *Budorcas taxicolor* and Musk Deer *Moschus* sp. in this area.

Two of us (CM and AD) spotted the Chinese Goral, about 3 km from Thingbu village (Fig. 1), in the Mago Chu Valley of Tawang district, while on the trail between Mago village and Thingbu. We first saw an adult male feeding in an open, steep grassy patch within Fir *Abies densa* forest at an altitude of 3000 m. The animal was dark chocolate in colour, except for the lower limbs, which were rufous. It had a small but distinct white patch on the throat. The dorsal side of the neck and shoulder had a black patch, which tapered to become the dorsal stripe, extending till the base of the tail. The tail was longer and relatively bushy compared to Himalayan Goral. After about 20 minutes, a female and a young joined the male, both of which had a relatively lighter coat colour. We watched this herd for another 15 minutes with binoculars, from a distance of c. 600 m, when they slowly disappeared out of sight behind some fir trees.

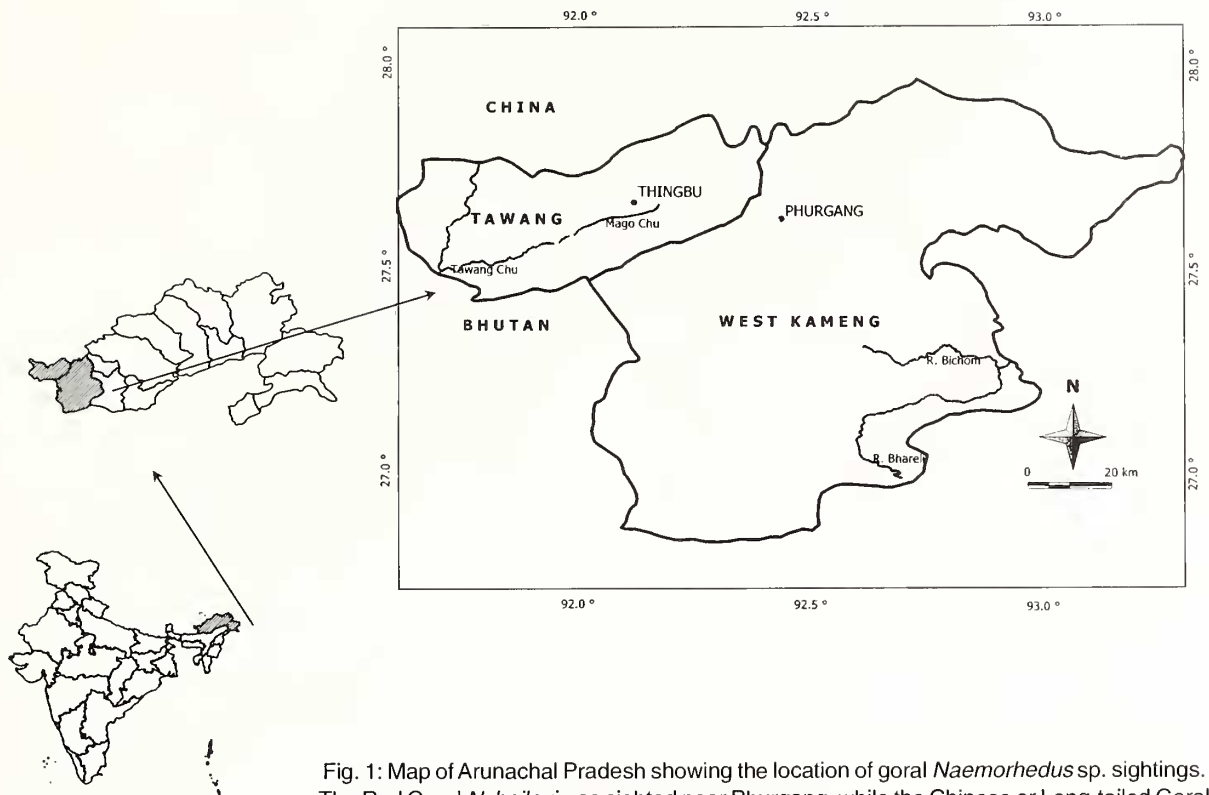


Fig. 1: Map of Arunachal Pradesh showing the location of goral *Naemorhedus* sp. sightings. The Red Goral *N. baileyi* was sighted near Phurgang, while the Chinese or Long-tailed Goral *N. caudatus* was seen near Thingbu

### Conservation Status

The Red and Chinese goral are categorized as 'Vulnerable' in the IUCN's Red List of Threatened Species (IUCN 2000). The Indian Wildlife (Protection) Act, 1972 does not list the Red Goral under any of its schedules (Anon 2003), however, Schedule III of the Act lists the Himalayan Goral (*Naemorhedus goral*) and *N. hodgsoni*. The Himalayan Goral has two subspecies, *N. goral hodgsoni* denotes the eastern subspecies (Groves and Grubb 1985); *N. goral bedfordi* is the Western Himalayan subspecies. Schedule III of the Indian Wildlife Act covers only the Himalayan Goral, and the reference to *N. hodgsoni* can be deleted from it to avoid confusion. More importantly, we recommend the immediate inclusion of the Red and Chinese Goral in Schedule I of the Indian Wildlife (Protection) Act. These species are of global conservation concern, and it is only appropriate that they are accorded the highest protection status under the Indian law.

Apart from China, India is the only other country to harbour all three currently recognized species of goral. In fact, the Mago Chu Valley of Tawang, along with adjoining areas of West Kameng district, is perhaps the only known region in the world to have all the three goral species. The area also has two other goat antelopes Takin *Budorcas taxicolor* and Serow *Naemorhedus sumatraensis*. The present

study has also established the occurrence of other rare and threatened wildlife in this region, such as the Snow Leopard *Uncia uncia*, Dhole *Cuon alpinus*, Musk Deer *Moschus* sp., Bharal *Pseudois uayaur*, and the Himalayan Marmot *Marmota himalayana*. Most of these species are currently hunted in this region. Establishment of community awareness and conservation programmes and designation of a protected area that is locally appropriate (such as a conservation or community reserve) are required urgently to safeguard the future of this fascinating wildlife assemblage of Western Arunachal Pradesh.

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## 6. CHARAKLA SALTPANS: A HAVEN FOR BLACK-NECKED GREBE *PODICEPS NIGRICOLLIS* BREHM

During a survey of coastal birds from January 11-14, 2003, we counted 1,432 Black-necked Grebes *Podiceps*

*nigricollis* at four sites (Table 1) in Jamnagar and Porbandar districts of Gujarat. The highest concentration of about 1,400